

**REMARKS**

Applicants respectfully request consideration of the present application. Upon entry of the above amendment, claims 1-5, 7-42, and 44-46 remain pending in the application.

**Rejection of Claims 1-3, 5-8, 11, 14-19, 22, 24-25, 27-28, 33-35, and 39 under 35 U.S.C. §****103(a)**

Claims 1-3, 5-8, 11, 14-19, 22, 24-25, 27-28, 33-35, and 39 are rejected under U.S. Patent No. 5,294,094 to *Crafton et al.* in view of U.S. Patent No. 5,265,851 to *Beuret et al.* In regard to claim 6, Applicants submit that this basis of rejection is moot in view of the cancellation of this claim herein. Regarding the remaining claims of this group, Applicants respectfully traverse this basis of rejection, for at least the following reasons:

The Office Action states:

Crafton et al. (col. 14, lines 58+; Fig. 6) teach the claimed casting system and method for producing metal castings: pouring a molten metal into molds at a casting station to form the castings; transferring the castings to an elevated drop-bottom furnace 111 equipped with lift means 116 including hooks 118 for [sic] engaging a casting support (basket) 40 of castings and heating means including electric and radiant heaters (col. 15, lines 23+) for heating the castings; opening the a [sic] sliding door 120 in the bottom of the furnace; depositing the castings in a fluidized bed chamber including a quench tank 148; and removing the castings from the chamber to the furnace after completion of heat treatment. Crafton et al. fail to teach the use of a mobile furnace.

However, Beuret et al. (col. 2, lines 19+) teach the use of mobile furnace equipped with rollers 8 such that the furnace can move on the track 9 (Fig. 4) for the purpose of effectively heat treating the casting and preventing heat loss [sic] between heat treatment station and casting station. It would have been obvious to one having ordinary skill in the art to provide Crafton et al. the use of a mobile furnace as taught by Beuret et al. in order to effectively control the casting temperature between heat treatment station and casting station [sic].

In regards to claim 1, Applicants submit that the combination of *Crafton et al.* and *Beuret et al.* does not teach or suggest all the limitations set forth in this claim as amended herein. As amended, claim 1 specifies that at least one of the first and second stations of the multi-station casting processing system comprises a fluidized bed. Although it is alleged that *Crafton et al.* discloses a fluidized bed, Applicants submit that no fluidized bed as claimed in claim 1 is taught or suggested by *Crafton et al.* In the Office Action, the quench tank 148, described by *Crafton et al.*, is interpreted as being a fluidized bed chamber. However, the term "fluidized bed" would not be interpreted by one of ordinary skill in the art to encompass the quench tank 145 set forth in *Crafton et al.*, because the quench tank is provided to cool the casting, whereas a fluidized bed as set forth in the specification and known to one of ordinary skill in the art, is used to provide heat to the casting. Consequently, *Crafton et al.* does not teach or suggest the combination of a mobile furnace and a heat providing fluidized bed. Also, *Beuret et al.* neither teaches nor suggests a fluidized bed. As a result, the combination of *Crafton et al.* and *Beuret et al.* does not teach or suggest all the limitations set forth in claim 1 as amended herein. Accordingly, amended claim 1 is not made obvious by this combination, nor are claims 2, 3, 5, 7, 8, 11, and 14-16, all of which depend from claim 1.

Regarding claim 17, Applicants submit that the combination of *Crafton et al.* and *Beuret et al.* does not teach or suggest a system that includes a casting station, a heat treatment station, and a mobile furnace movable from the casting station to heat treatment station. While *Crafton et al.* does generally discuss forming a casting in a mold, it is silent as to the means by which the casting is removed from the mold or transferred to the heat treating apparatus disclosed therein. Moreover, *Beuret et al.* includes no mention of forming a casting nor describes a casting station. Consequently, this combination of references neither teaches nor suggests any means for moving

a casting from a casting station to a heat treatment station and, in particular, provides no teaching of a mobile furnace for transporting castings between two such stations. Consequently, every limitation set forth in claim 17 is not taught or suggested by the combination of *Crafton et al.* and *Beuret et al.* Thus, this claim is not obvious in view of this combination of references. Moreover, claims 18, 19, 22, 24, 25, 27, and 28 are not obvious in view of this combination because they each depend from claim 17.

In regards to claim 33, Applicants submit that not every limitation set forth in the claim is taught or suggested by the combination of references. In particular, the combination of *Crafton et al.* and *Beuret et al.* neither teaches nor suggests at least the step of removing castings from a heat treatment chamber to a mobile furnace after completion of heat treatment. Rather, both *Crafton et al.* and *Beuret et al.* teach inserting a casting into a furnace for heat treatment, but not removing a casting to a mobile furnace after completion of heat treatment. Therefore, claim 33, as well as claims 34, 35, and 39, which depend from claim 33, are not obvious in view of this combination of references.

In view of the foregoing, Applicants respectfully request withdrawal of this basis of rejection.

**Rejection of Claims 4 and 23 under 35 U.S.C. § 103(a)**

Claims 4 and 23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Crafton et al.* and *Beuret et al.* and further in view of U.S. Patent No. 6,725,903 to *Laurino*. Applicants respectfully traverse this basis of rejection, for at least the following reasons:

The Office Action states:

Crafton et al. in view of Beuret et al. fails to teach the use of a casting retractor.

However, Laurino (col. 3, lines 63+) teaches the use of a casting retractor (robotic grippers) 49a , 49b for the purpose of effectively retracting the casting from the mold (col. 4, lines 3+). It would have been obvious to one having ordinary skill in the art to provide Crafton et al. in view of Beuret et al. the use of a casting retractor as taught by Laurino in order to effectively retract the casting from the mold.

In regard to claim 4, Applicants submit that this combination of references does not teach or suggest every limitation set forth in claim 4, in view of the amendment of claim 1 from which claim 4 depends, because none of the references either singly or in combination teach or suggest a fluidized bed as discussed above. Consequently, claim 4 is not made obvious by this combination of references.

In regard to claim 23, Applicants also submit that not every limitation set forth in the claim is taught or suggested by this combination of references. In particular, the combination again fails to teach or suggest at least the claim 17 limitation of a mobile furnace for transporting castings from a casting station to a heat treatment station. While *Laurino* does disclose means for transferring a casting from a casting machine to another station, no teaching or suggestion is provided that this means can provide heat to the casting or is a mobile furnace. *Crafton et al.* and *Beuret et al.* are silent as to providing an means for moving a casting between a casting station and a heat treatment station. Therefore, the combination of references does not teach or suggest a mobile furnace for transporting casting from a casting station to a heat treatment station. Therefore, claim 23 is not obvious in view of this combination of references.

**Rejection of Claims 9, 10, 20, 21, 36, 37, and 40-46 under 35 U.S.C. § 103(a)**

Claims 9, 10, 20, 21, 36, 37, and 40-46 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Crafton et al.* in view of *Beuret et al.* and further in view of U.S. Patent No. 6,093,367 to *Barboni et al.* Applicants respectfully traverse this basis of rejection, for at least the following reasons:

The Office Action states:

Crafton et al. in view of Beuret et al. fails to teach the use of a removable lid in claims 9-10 and 20-21 and multiple heat treatment chambers in claims 36-36 and 40-46.

However, Barboni et al. (col. 3, lines 60+) teach the use of a removable lid 4b, 5b, 6b for the purpose of effectively covering the multiple heat treatment chambers. It would have been obvious to one having ordinary skill in the art to provide Crafton et al. in view of Beuret et al. the use of coupling the hook of the casting support with the removable lid as taught by Laurino in order to effectively reduce the cycle time of heat treatment.

In regards to claims 9 and 10, Applicants submit that this combination of references does not teach or suggest every claim limitation, particularly a fluidized bed. As discussed above, *Crafton et al.* and *Beuret et al.* are silent as to a fluidized bed. Moreover, *Barboni et al.* neither teaches nor suggests a fluidized bed. As a result, these claims are not made obvious by this combination of references.

In regards to claims 20 and 21, the above remarks as to claims 9 and 10 apply equally to these claims because none of the cited references teaches or suggests a fluidized bed. Consequently, claims 20 and 21 are not made obvious by this combination of references.

Claims 36, 37, 40 and 41 all include a fluidized bed, and therefore, are not made obvious by this combination of references.

In regards to claims 42, 44, 45, and 46, Applicants submit that this combination of references does not teach or suggest the method as set forth in amended claim 42. In particular, the combination of *Crafton et al.*, *Beuret et al.*, and *Barboni et al.* neither teaches or suggests processing a casting within a processing station comprising exposing the casting to a fluidized bed, for, as stated above, none of these references, either singly or in combination, teaches or suggests a fluidized bed. Accordingly, not every limitation set forth in amended claim 42 is taught or suggested by the combination of references. Moreover, since claims 44-46 depend from claim 42, this combination fails to teach or suggest every limitation set forth in these claims.

In view of the foregoing, Applicants submit that these claims are not made obvious by the combination of *Crafton et al.*, *Beuret et al.*, and *Barboni et al.* As a result, Applicants request withdrawal of this basis of rejection.

**Rejection of Claims 12, 13, 26, 29, 30, 32 and 38 under 35 U.S.C. § 103(a)**

Claims 12, 13, 26, 29, 30, 32 and 38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Crafton et al.* in view of *Beuret et al.* and further in view of U.S. Patent No. 5,416,967 to *Cress*. Applicants respectfully traverse this basis of rejection, for at least the following reasons:

The Office Action states:

*Crafton et al.* in view of *Beuret et al.* fails to teach the use of a thermal arresting unit.

However, *Cress* (col. 5, lines 45+) teaches the use of a thermal arresting unit for the purpose of effectively storing castings and preventing heat loss. It would have been obvious to one having ordinary skill in the art to provide *Crafton*

et al. in view of Beuret et al. the use of thermal arresting unit as taught by Cress in order to effectively reduce heat loss of stored castings waiting for heat treatment.

In regards to claims 12, 13, 26, 29, 30, and 32, Applicants submit that this combination of references neither teaches nor suggests a fluidized bed and, thus, does not teach or suggest every limitation set forth in these claims. Accordingly, these claims are not made obvious by this combination of references.

In regards to claim 38, Applicants submit that the combination of references neither teaches nor suggests the limitations of the base claim 33, including, for example, removing castings from a heat treatment chamber to a mobile furnace after completion of heat treatment. As discussed above, *Crafton et al.* and *Beuret et al.* teach only inserting a casting into a furnace for heat treatment and not removing a casting to a mobile furnace after heat treatment. *Cress* is silent as to a mobile furnace, and therefore, certainly doesn't teach or suggest such a limitation. Therefore, claim 38 is not obvious in view of this combination of references. Accordingly, the basis of rejection should be withdrawn.

**Rejection of Claim 31 under 35 U.S.C. § 103(a)**

Claim 31 is rejected under 35 U.S.C. § 103(a) as being unpatentable over *Crafton et al.* in view of *Beuret et al.* and further in view of *Cress* and *Barboni et al.* Applicants respectfully transverse this basis of rejection, for at least the following reasons:

The Office Action states:

Crafton et al. in view of Beuret et al. and further in view of Cress fails to teach the use of a removable lid.

However, Barboni et al. (col. 3, lines 60+) teach the use of a removable lid 4b, 5b, 6b for the purpose of effectively covering the multiple heat treatment chambers. It would have been obvious to one having ordinary skill in the art to

provide Crafton et al. in view of Beuret et al. and further in view of Cress the use of coupling the hook of the casting support with the removable lid as taught by Laurino in order to effectively reduce the cycle time of heat treatment.

Applicants submit that this combination of references neither teaches nor suggests a fluidized bed as set forth in claim 31, and, thus, does not make this claim obvious. As set forth above, none of these references, either singly or in combination, teaches or suggests a fluidized bed. Therefore, this basis of rejection should be withdrawn.



**CONCLUSION**

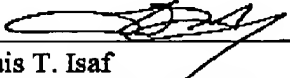
Upon entry of the above amendment, Applicant respectfully submits that the application is in condition for allowance and requests prompt notification thereof. However, if the Examiner believes any issues remain in the present application, Applicant respectfully requests that the Examiner contact that the undersigned attorney.

**AUTHORIZATION**

The Commissioner is hereby authorized to charge any additional fees that may be required for the timely consideration of this Amendment, or credit any overpayment to Deposit Account No. 09-0528.

Respectfully submitted,

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Date

  
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